Testimony of Jeff Mao, Coordinator of Educational Technology, Maine Department of Education

Before the Senate Committee on Commerce, Science and Transportation

Educational Technology, the State of Maine, and E-Rate
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Jeff Mao
Coordinator of Educational Technology
State of Maine
Department of Education
23 State House Station
Augusta, Maine 04333-0023
(207) 624-6634 (V)
(207) 624-6601 (FAX)
http://www.maine.gov/education

Chairman Stevens, Ranking Member Inouye and members of the Committee, thank you for the opportunity to testify today. I am Jeff Mao, Coordinator of Educational Technology for the Maine Department of Education. My primary responsibility is the implementation of Maine's 1 to 1 laptop program, the Maine Learning Technology Initiative that provides wireless laptop computers for all 7th and 8th grade students and their teachers, teacher and technical training, and support to all of Maine's middle schools. In addition I provide direct support to schools for their local educational technology efforts.

I appreciate the opportunity to share with the Committee how Maine has leveraged the support that E-Rate provides our schools and libraries to improve both the equitable distribution of universal broadband and the resources available to students, teachers, and our public libraries.

Maine has a long tradition of innovation in and support for education. In recent years, Maine has embraced the use of technology to improve the quality and scope of educational resources available to students and lifelong learners throughout the state. Thanks to the E-Rate program, Maine has been able to leverage state funds to make broadband service available to schools and libraries statewide. The E-Rate program provides the foundation on which Maine's innovative technology programs are built. In order to sustain these programs, it is critical that the E-Rate program continue to exist and to provide secure funding to support the continued deployment and maintenance of broadband services statewide. If the E-Rate program were to cease to exist, it would undoubtedly lead to significant setbacks in the progress of these innovative programs as well as the deployment and availability of broadband services throughout the state. The continuation of the E-Rate program is critical to Maine's students and Maine's future.

E-Rate and the Maine School and Library Network (MSLN)

Maine established the Maine School and Library Network in order to ensure universal broadband access for all of Maine's schools and libraries. In 2001, Maine's Legislature established the Maine Telecommunications Education Access Fund (MTEAF, 35-A M.R.S.A. Section 7104-B) that required all telecommunications providers in Maine to contribute to a fund, which would be used to support the Maine School and Library Network. In addition, it established that all schools and libraries receiving services from the Maine School and Library Network would be required to apply for Federal assistance through the E-Rate program. All Maine citizens and businesses invest in the Maine Telecommunications Education Access Fund, matching the Federal assistance Maine receives from E-Rate. Today, broadband services in schools and libraries are funded by E-Rate and the Maine Telecommunications Education Access Fund. The Maine School and Library Network is available to all schools and libraries, providing universal broadband services to over 900 schools and libraries in all corners of Maine.

The Maine School and Library Network is both technically and figuratively the backbone of educational technology efforts in the State of Maine.

Maine Statewide Educational Technology Programs

Maine Learning Technology Initiative (MLTI)

In March of 2000, Governor Angus King announced plans to create a statewide 1 to 1 learning initiative that would provide every student in grades 7 and 8 with a digital learning device. Today, the Maine Learning Technology Initiative program is in its fourth full year and is known around the world as the leading educational technology innovation. The program has provided 1 to 1 wireless laptop computers to approximately 68,000 students and over 3000 teachers since the fall of 2002. The program installed wireless networks in every middle school

in Maine, and provides on-going teacher and technical training throughout the school year. Teachers and students utilize digital tools and resources both on the laptops and on the Internet from Fort Kent to Kittery. Every middle school in Maine, from the small rural schools of Aroostook county to the coastal fishing communities in Washington county to the more urban cities of Lewiston and Portland are accessing online resources via State-funded wireless laptop computers. Teachers have invested countless hours at professional development workshops learning to leverage the resources now available to all of their students at school from their broadband connection. Teachers report that their teaching has been revitalized by the infusion of technology and new teaching methods, and students report they are more engaged and invested in their learning. The Maine Learning Technology Initiative follows in the footsteps of Maine School and Library Network as the second major educational program that is equitably and universally distributed to all Maine students and schools regardless of rurality or economics.

Roughly 60% of schools allow their students to take their MLTI laptops home. While many families have purchased Internet access at home, not all do. While no total solution has been applied, the issue has been mitigated by two important programs. First, 68 public libraries have identified local funding sources to install wireless networks, allowing both students and patrons in general to visit the library and utilize the broadband service. The number of libraries offering wireless access is expected to continue to grow. Second, the Maine Learning Technology Foundation, founded by former Governor Angus King has raised private funds which are being used to pay for dialup Internet access for students with a Maine Learning Technology Initiative laptop and who qualify for the Federal Free and Reduced lunch program.

Data from studies performed by the Maine Education Policy Research Institute (MEPRI) at the University of Southern Maine illustrate the impact of both the program, and it’s reliance on

broadband connectivity. A recent report[1] from MEPRI by the chief researcher, David Silvernail, Ph.D., included data from a recent survey done in the spring of 2005 of just over 1100 teachers:

- 94% responded that having a laptop helped them access more up-to-date information.
- 93% responded that they could access more diverse teaching materials and resources.
- 90% responded that they could explore topics in greater depth with students.
- 89% responded that students were more engaged when using laptops.
- 89% responded that students were better able to study real-life issues/problems using laptops than without them.
- 87% reported that laptops facilitated students' ability to integrate information from multiple resources
- 80% responded that data indicates technology is positively affecting student achievement.

In the same report, a survey of over 16,500 7th and 8th grade students in the program given in the spring of 2005 revealed similar findings:

- 96.2% responded that they were capable of effectively utilizing a search engine.
- 85% responded that they were more likely to edit their work when using a laptop.
- 73% responded that they were capable of effectively utilizing a spreadsheet to create graphs.
- 72% responded that they were more interested in school when using the laptops.

Also included in the report, a survey of 200 middle school principals showed that 89% saw the laptop program positively impacted improved student achievement in their schools.

Researcher Anne Davies, Ph.D. studied the affects of the MLTI program in a small rural school in downeast Maine. Her report, "Finding Proof of Learning in a One-to-One Computing Classroom" found that, "Students apply, analyze, synthesize, and evaluate information and

[1] "The Impact of the Maine Learning Technology Initiative on Teachers, Students, and Learning. Maine's Middle School 1-to-1 Laptop Program", Dr. David Silvernail, Ph.D., February 2006. Report was presented to the Joint Standing Committee on Education and Cultural Affairs, Maine State Legislature. Copies of relevant slides from the presentation are included as Appendix A.

knowledge more often." She also concluded, "Being a student in a one-to-one, high-speed, wireless computing classroom makes a difference for learning."[2]

The impact of the Maine Learning Technology Initiative for Maine has been significant. The implications of the project are far reaching. With ready access to wireless laptop computers that have broadband connectivity, teachers are enriching their curriculums. Textbooks are becoming less important as current, varied, and often interactive resources and content can be gathered and accessed from the Internet. Not only could this yield future fiscal savings, but it means that teachers are given more flexibility to create and present content to their students. This allows teachers to individualize instruction as well as craft curriculum that best meets the needs of the students. Ultimately, this flexibility means that teachers will be able to better help students achieve and meet local, state, and federal standards including *No Child Left Behind*.

The Maine Learning Technology Initiative is a successful innovation that continues to prove itself. It has been carefully designed and implemented based upon a few simple but powerful ideas, 1) One laptop, one student, equity for all, 2) Wireless access to broadband services in all instructional areas in every school provides access to boundless resources and provides a robust communications network, and 3) Teachers must be provided with the necessary training to leverage these newly available resources. These three ideas are like the legs of a stool, remove any one, and the stool will fall. E-Rate provides the broadband access. The State of Maine has invested over $38 million dollars over the last four years to provide the computers, wireless networks, and the necessary teacher training.

[2] "Finding Proof of Learning in a One-to-One Computing Classroom", Dr. Anne Davies, Ph.D., April 2004. Copies of the full report are available from http://www.connect2learning.com.

Maine Distance Learning Project (MDLP)

In 1998, the Maine Distance Learning Project (MDLP) was established to provide the geographically dispersed population of Maine students and teachers a way to connect and share. The State of Maine invested $15 million dollars to create interactive video conferencing rooms. Today, 91 classrooms and 11 sites funded by the Marine Science and Biotech Initiative connect over broadband connections with high quality audio and video feeds. Up to 4 sites may connect in a fully interactive mode allowing schools to share resources.

This year, 28 high school course offerings are being taught over the system including high need courses such as AP Calculus, AP Calculus AB, AP Statistics, AP Physics, and AP US History. These courses would not typically be available to small rural schools which do not have the staffing or resources to provide these offerings. In addition, courses like Japanese language (first and second year), Environmental Science, and American Sign Language (first, second, and third year) are taught to students through the system.

Newsweek's article, May 16, 2005, "Other Winning Equations" by Dan Berrett and Dan Brillman featured one of Maine's schools in the Maine Distance Learning Program. Carrabec High School in North Anson is a small rural high school of fewer than 300 students serving a community where only 50% of the adults in the community have a high school degree. Carrabec High School expanded its AP course offerings from two to eight by utilizing both the Maine Distance Learning Program system as well as online course offerings. Carrabec High School's students are not the only students to benefit as they also provide coursework to other rural schools using the Maine Distance Learning Program system like Brendan Murphy's AP Calculus and AP Statistics courses. On Murphy's wall, a "College Hall of Fame" celebrates his students' achievements noting that this school year, among his graduated students, are some attending

higher education institutions including MIT, Columbia University, and the University of Michigan.

Many regions have collaborated to a level not often seen. Not only do they share coursework over the system, they aligned their school bell schedules and vacation schedules so that all students from all of the schools would have equal opportunity to take advantage of the Maine Distance Learning Project course offerings. School consortiums in the most rural and remote northern and eastern areas of Washington, Aroostook, and Penobscot counties have worked together to facilitate collaboration and resource sharing.

The Maine Distance Learning Project system is used for more than course delivery. It also serves as a portal to the world allowing students to interact with people from different parts of the United States and the world. For example, students from Jonesport Beals, a small rural downeast coastal community use the Maine Distance Learning Project system to meet and talk with other students from Ireland who also live in a small rural fishing community. Students from Skowhegan interviewed World War II veterans living in Hawaii who were present at the Pearl Harbor attack. Many schools use the Maine Distance Learning Project system to provide job fair interviews with professionals in fields that do not exist in their own rural communities.

Maine Distance Learning Project is also used for virtual field trips allowing schools to expose students to new and exciting resources without having to lose valuable instructional time traveling or spend limited local funds on transportation expenses. Maine Distance Learning Project in conjunction with the Maine State Library, the Maine Department of Education, and the Mitchell Institute's Great Maine Schools Project have recently been awarded a grant from the Verizon Community Foundation to fund the creation of more virtual field trips related to Maine's Native American populations. Other organizations are also creating virtual field trips including

the Penobscot Marine Museum (http://www.penobscotmarinemuseum.org) and PCA Great Performances (http://www.pcagreatperformances.org).

Maine's Virtual Library, *MARVEL!*

Maine began its virtual library in 2000. *MARVEL!* provides every resident of Maine with access to a collection of full text and abstracts from magazines, newspapers and reference books that are credible, reputable resources. *MARVEL!* also provides students, business people, public library patrons, and higher education students and educators the ability to search a number of resources at one time for needed information. The print value of the resources provided in these databases would be in excess of $500,000 per library. One example of cost savings is as follows:

- Maine has 214 schools (public and private) that contain grades 9-12.
- If one of these schools were to purchase just the EBSCO resources contained in *MARVEL!*, it would cost that school $16,800.
- If all of these 214 Maine schools purchased just the EBSCO materials on their own, the total cost would be $3,595,200.

The collaboration between the Maine State Library, the University of Maine, the Maine State Legislature, and the Maine Telecommunications Educational Access Fund that funds the state-wide licensing of these resources for every library and resident of Maine is a truly cost-effective service that can benefit every Maine citizen. Without the Internet access supported by E-Rate, *MARVEL!* would not be universally available to all Maine students from school, and to all Maine citizens from their public libraries.

Conclusion

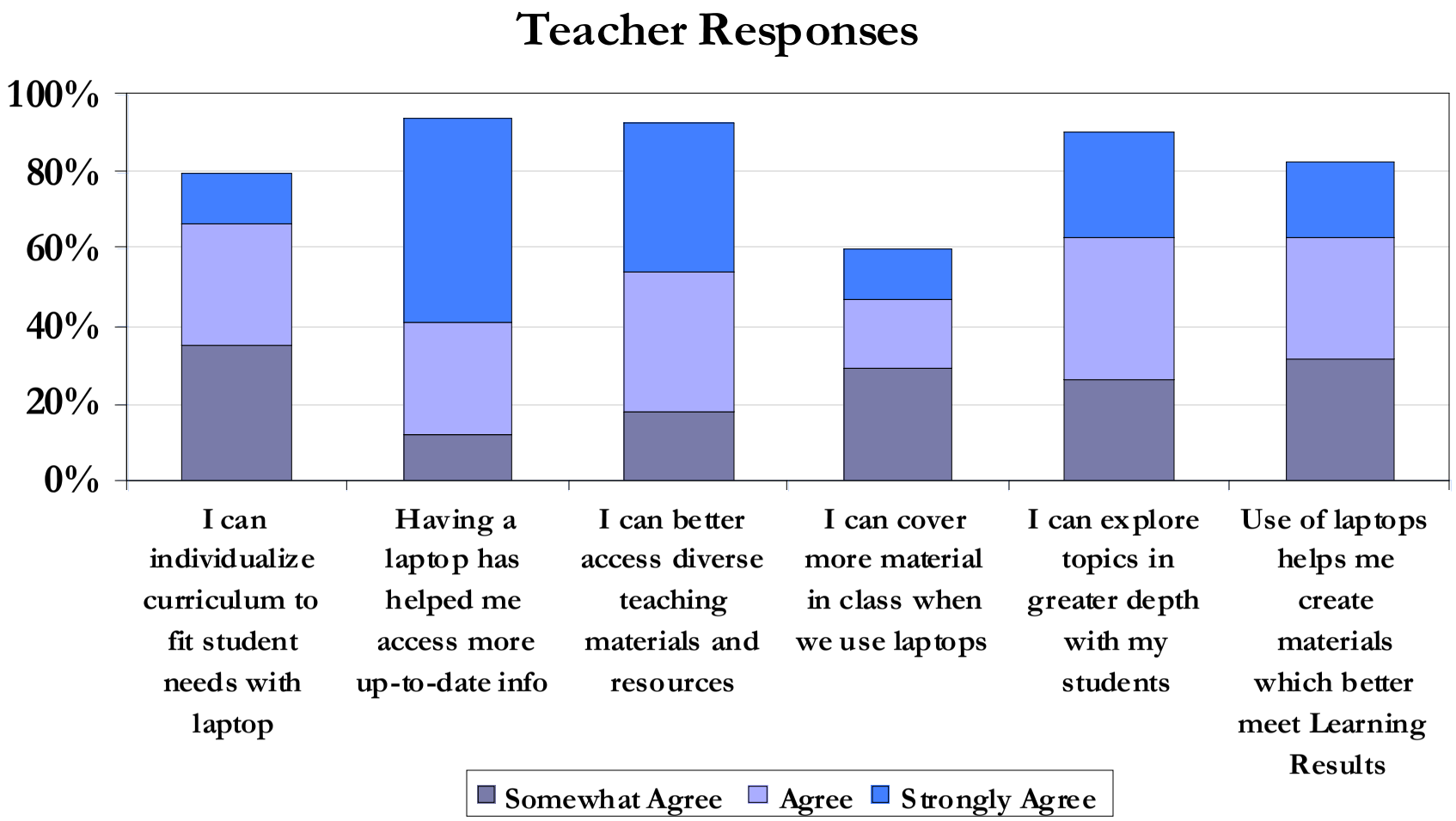
In keeping with its long history of innovation in education, Maine has embraced the E-Rate program and has used it to leverage millions of dollars in state and local funding for a wide

range of technology programs. These programs are directly improving the learning opportunities available to students, teachers, and citizens throughout the state of Maine by making high speed Internet access, distance learning, and innovative courseware available throughout the state. These learning opportunities are a critical part of Maine's efforts to catapult its students, businesses, and citizens into the 21st Century.

These opportunities would not be possible were it not for the E-Rate program. Maine's citizens, businesses, and State government have invested in the Maine Telecommunications Education Access Fund (including the Maine School and Library Network and MARVEL!), the Maine Learning Technology Initiative, and the Maine Distance Learning Project to provide unique and innovative opportunities for not only Maine students, but for all of Maine's citizens. These investments all grew from the E-Rate funding, which provided the ability to leverage state funds for the creation of the Maine School and Library Network, which provides broadband Internet connectivity to Maine's schools and libraries. These programs are key components in Maine's strategy to ensure that Maine students are ready for the 21st Century, and the E-Rate program has formed the foundation, which has allowed the State of Maine to build these innovative educational technology programs. Without the E-Rate program, the future of all of these innovative programs would be put in jeopardy. The continuation of the E-Rate program is critical to Maine's students and Maine's future.

Thank you again Chairman Stevens, Ranking Member Inouye and members for allowing me this opportunity to share with you the positive impact that the E-Rate program has had on Maine's schools and libraries.

What are the impacts of the laptops on instruction?



Excerpts from "The Impact of the Maine Learning Technology Initiative on Teachers, Students, and Learning. Maine's Middle School 1-to-1 Laptop Program", Maine Education Policy Research Institute, Dr. David Silvernail, Ph.D., February 2006.

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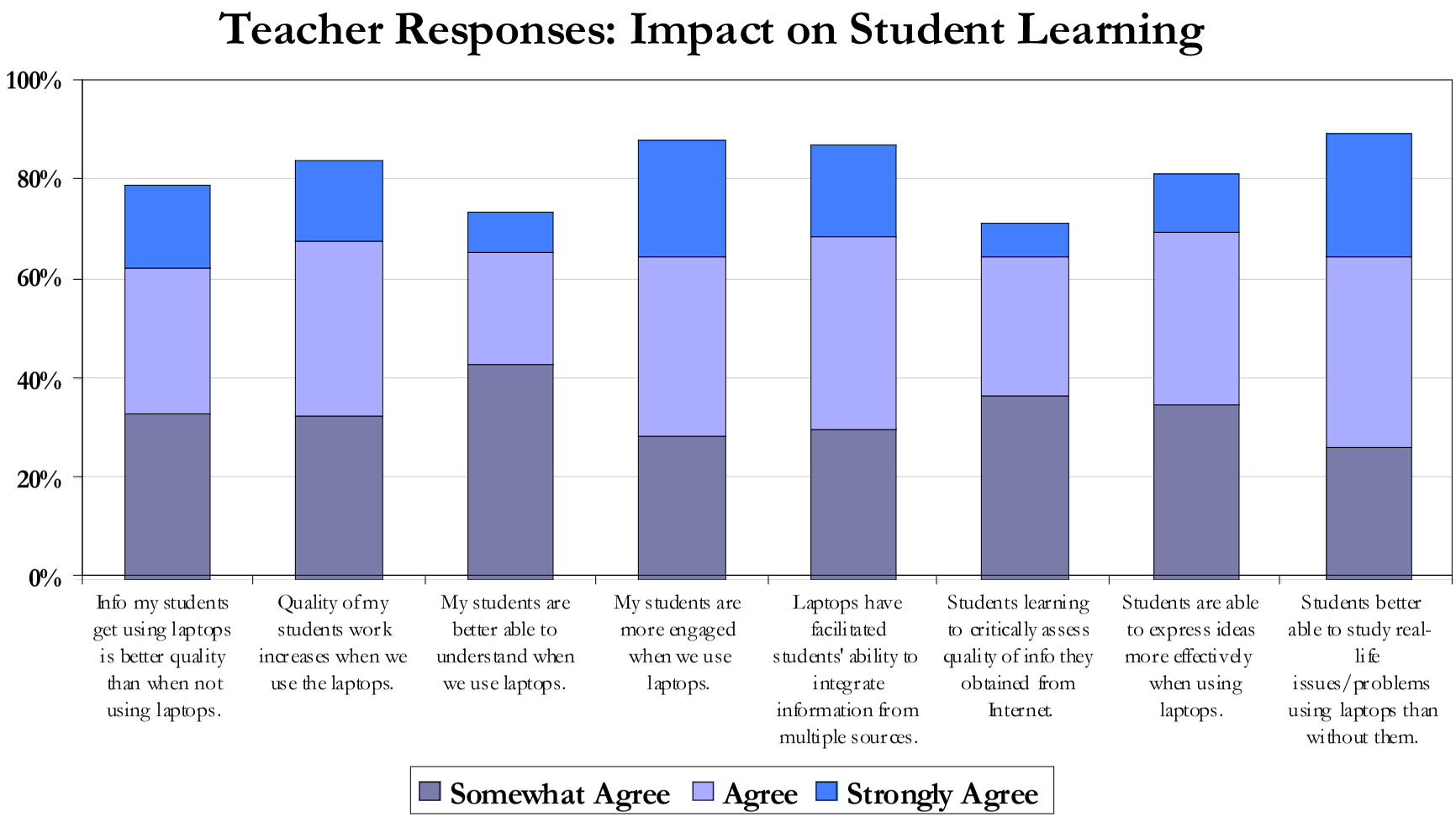

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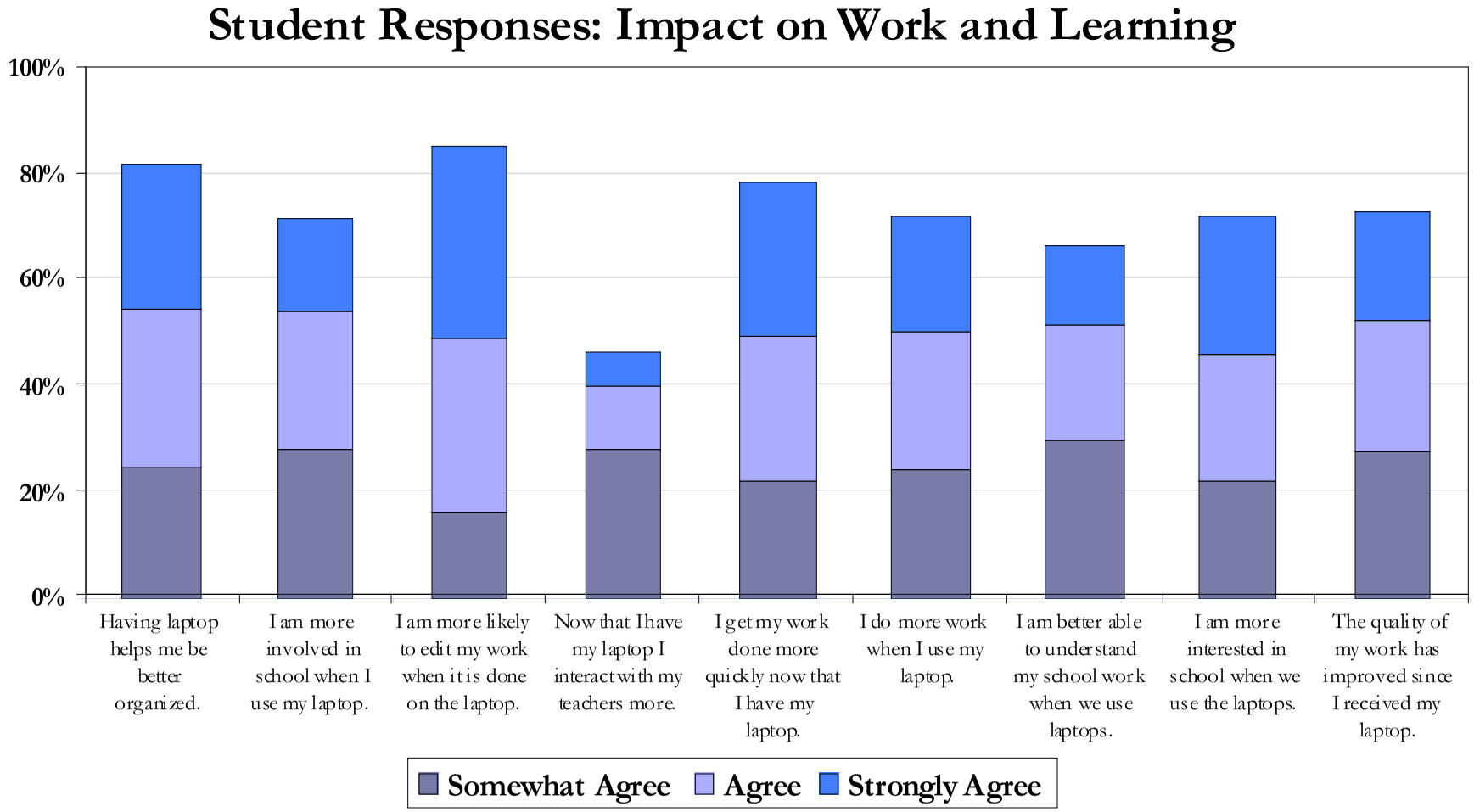

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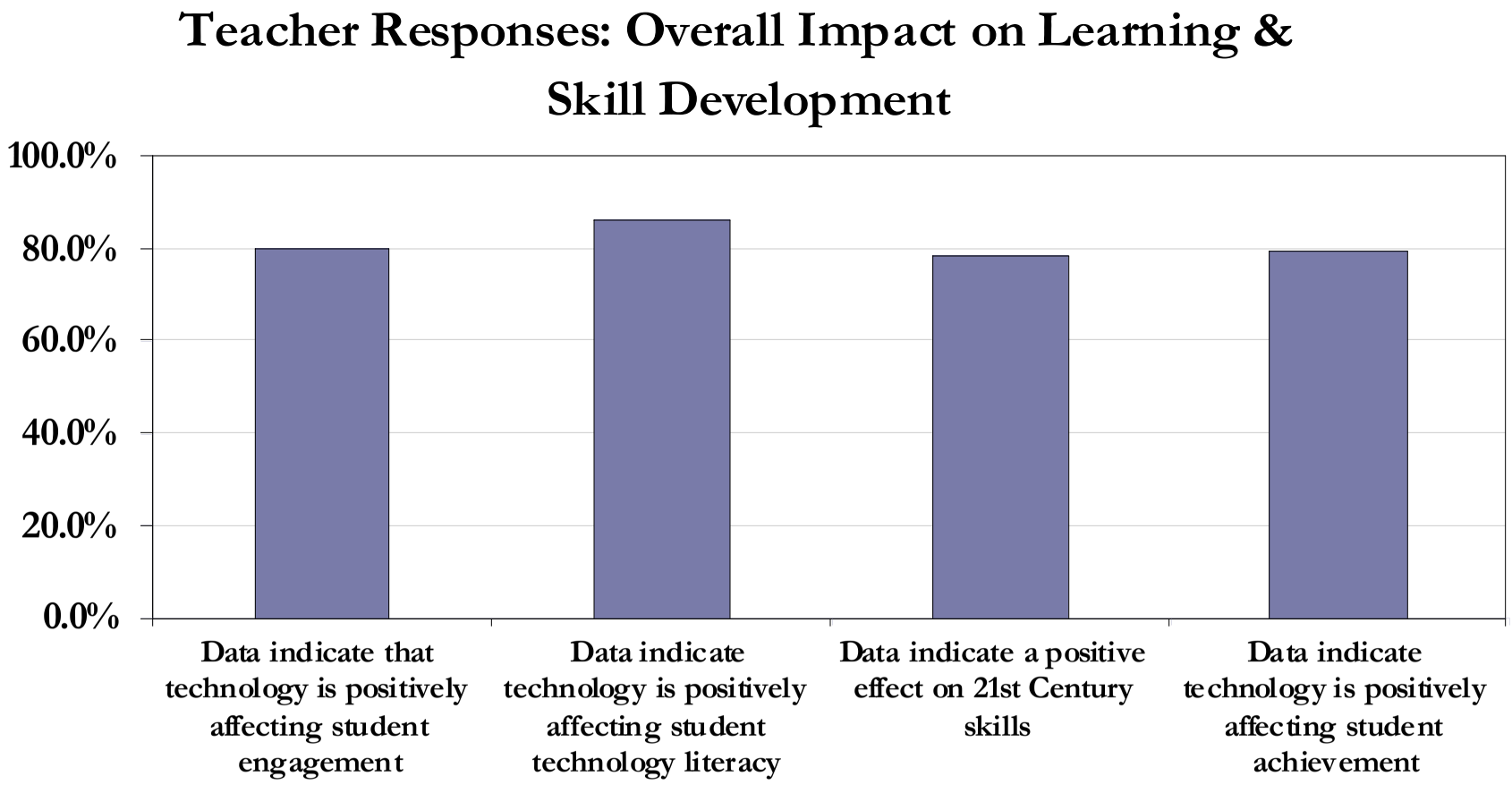

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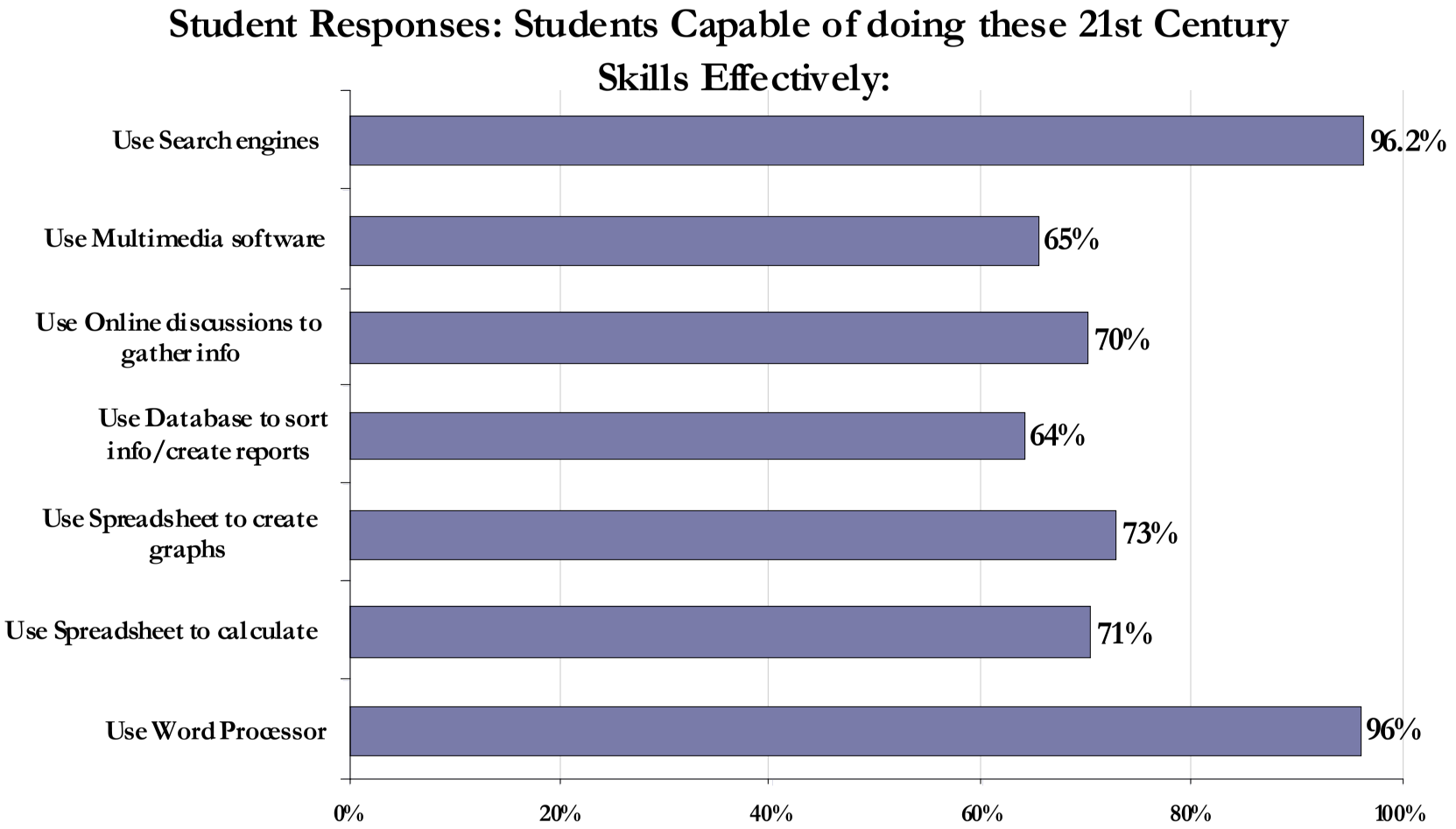

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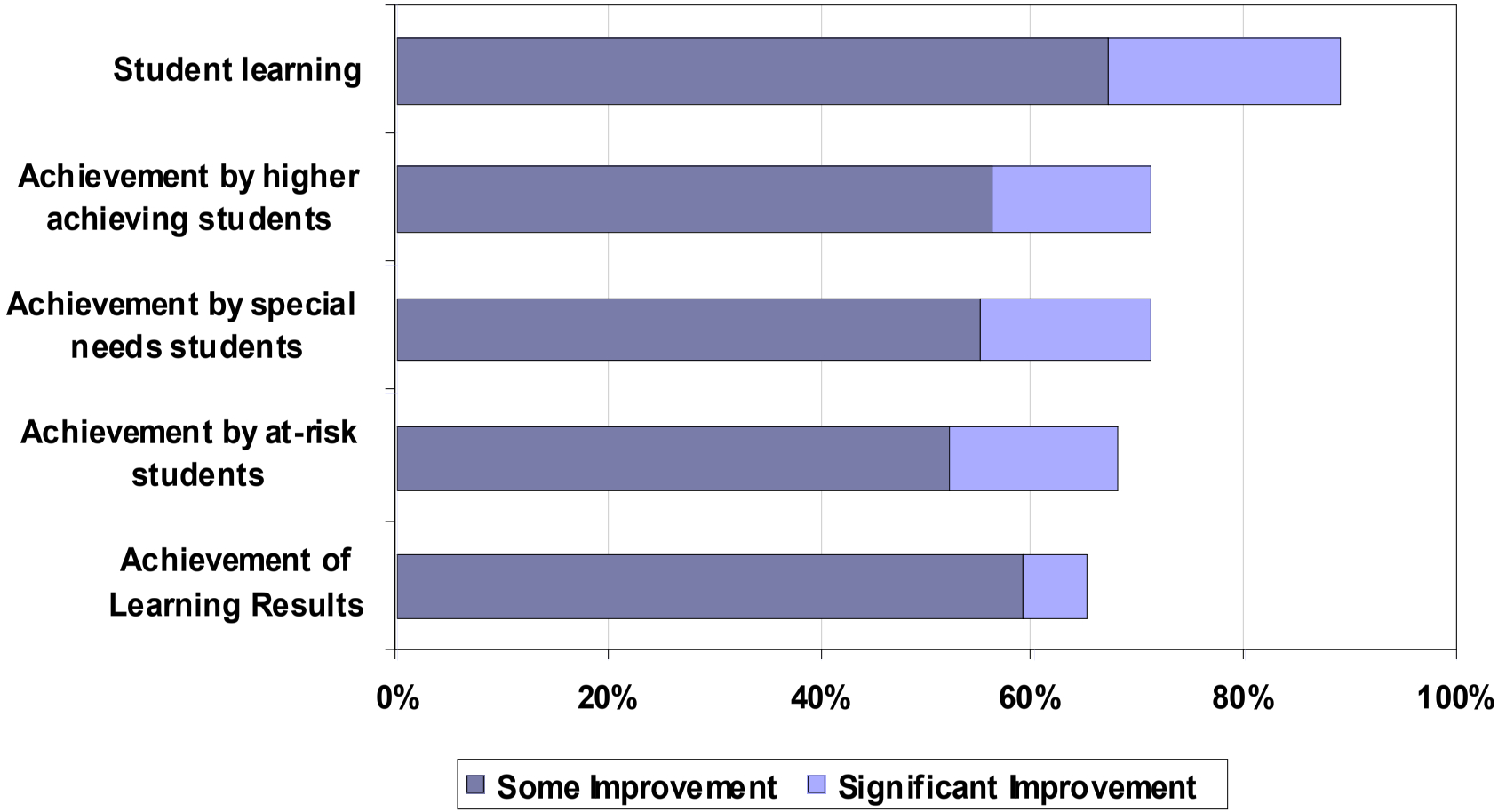

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